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the whole plantigrade sole on the ground, the hind feet especially, the *Dinomys* has a waddling gait, and reminds one of an immense rat well advanced in development towards a bear.

The predominant feature of the character of *Dinomys* is a combination of leisurely movements and supreme good nature. It knows absolutely nothing of haste. Spending the greater part of the day sleeping in a corner—the mother often lying upon the young one, or standing over it, as if to protect and to keep it warm—opening its half-closed eyes only when it hears the approaching steps of the keeper, it forms the resolution to move with slow gait, expecting some food, evidently governing its movements as much by hearing and smell as by sight. It is not easily irritated, and permits one to stroke and to scratch its head and back, and only occasionally manifests its displeasure by a low guttural growl. I have never yet observed a manifest intention to bite. When let out of the cage it makes no attempt to escape, and limits its excursions to an exploration of the immediate neighborhood in search of something to eat. It occasionally scratches itself rapidly with its long claws, which is the only occasion on which it manifests a capacity for rapid movements when required. One thing not yet definitely verified by us is its proclivity for digging, the development of the claws at least leading to the supposition that the animal is well fitted for that purpose. The amiable relations always existing between mother and son prepossesses one most favorably as to the natural disposition of the animals.

As matters now stand, it would be justifiable to suppose that the true home of *Dinomys* is not properly in the Peruvian Andes, and that the first specimen found there was merely a stray individual and that its actual habitat may rather be located in the almost unexplored regions of the eastern slopes and tablelands of the Bolivian and Peruvian foot-hills bordering on Brazil, including geographically the head-waters of the rivers Acre, Purús and Juruá.

F. A. LUCAS.

CURRENT NOTES ON METEOROLOGY.

MONTHLY WEATHER REVIEW.

THE two latest issues of the *Monthly Weather Review* (July and August, 1904, dated September 19 and October 21 respectively) contain the following papers of general interest: 'The Movements of the High Clouds in the West Indies,' by J. T. Quinn; 'Attempts at Methodical Forecasting of the

Weather,' by L. Besson (translated from the French); 'Air Radiation,' by C. C. Hutchins and J. C. Pearson, of Bowdoin College; and notes on 'Meteorology at Montpellier, France,' 'Early American Weather Records,' 'Weather and Crops in Arizona,' 'The Climate of Manila,' 'Secular Changes in Climate,' 'The Capacity of the Air for Aqueous Vapor,' 'Temperature of the Upper Atmosphere,' 'Precipitation in Wisconsin,' 'Meteorology in Chile' and 'Cannonading' against Hail! Further, 'The Annual and Geographical Distribution of Cyclones of High Velocity in the United States, 1893-1902,' by Stanislav Hanzlik; 'Dust in the Atmosphere during 1902-03,' by Andrew Noble; 'The Origin of the Cuba Cyclones of June 13-14, 1904,' by Maxwell Hall; and the following notes: 'The Primary and Secondary Rainbows,' 'Formation and Movement of Hurricanes,' 'A Legal Decision as to Damage by Lightning and Wind,' 'Are the Movements of Thunderstorms deflected by the Tide?' and 'The Diurnal Variation of the Barometer at Milwaukee.'

CHANGES IN BLOOD AT HIGH ALTITUDES.

DR. K. BURKER, of the Physiological Institute of Tübingen, has been making an experimental study of the physiological effects of high altitudes at the Schatzalp Sanatorium, 6,119 feet above sea-level. In the case of rabbits brought from a lower level, and kept for different lengths of time at 6,000 feet, an increase of 25 per cent. in the amount of iron in the blood was noted. The liver showed first an increase of iron; then, after a longer time at the greater altitude, a decrease, and in the case of rabbits kept still longer, there appeared to be less iron than in the livers of rabbits at Tübingen. In a similar line are the studies of the blood of human beings made by Dr. Gaule during two balloon trips. The effect of the balloon trips was to increase the number of red corpuscles of each of the persons examined. Similar results have previously been obtained by Viault, Müntz and others.

AN INSTRUMENT FOR DETERMINING WIND AT SEA.

In the *Quarterly Journal of the Royal*

Meteorological Society, October, 1904, Mr. A. L. Rotch, of Blue Hill Observatory, describes an instrument for determining the true direction and velocity of the wind at sea, devised by himself and constructed by Casella, of London. With this instrument the angles of the apparent and true wind relative to the ship are measured directly, and by utilizing the ship's course and speed as a base, absolute directions and velocities of both winds are immediately ascertained.

GENERAL CIRCULATION OF THE ATMOSPHERE.

THE report by Hildebrandsson, to the International Meteorological Committee, on the international cloud observations, the principal conclusions in which were some months ago referred to in these 'Notes,' is published in English in the *Quarterly Journal of the Royal Meteorological Society*, Vol. XXX., October, 1904. This study has attracted much attention because of the new views advanced in it concerning the general circulation of the atmosphere, and it is well to have it accessible to a larger number of readers than was the case with the original publication in French.

KITE-FLYING AT SEA.

DURING the past summer, the Prince of Monaco has been investigating the meteorology of the free air in the northeast trade wind latitudes. Kites have been flown from the yacht *Princess Alice*, and an altitude of nearly 17,000 feet was attained on one occasion. In this kite work, Dr. Hergesell was actively interested and he accompanied the expedition, but Americans will recall that the first suggestion concerning the use of kites for exploring the atmosphere over the oceans was made by Mr. A. L. Rotch, of Blue Hill Observatory.

METEOROLOGICAL INSTITUTE OF SAXONY.

THE 'Jahrbuch' of the Royal Meteorological Institute of Saxony for 1900, compiled by Dr. Paul Schreiber, contains an elaborate critical discussion of the pressure observations made in Saxony between 1866 and 1900, as well as the meteorological summary for the year 1900, with special discussions of evaporation measurements, thunderstorms and depth of snowfall.

R. DEC. WARD.

BOTANICAL NOTES.

STUDIES IN PLANT FECUNDATION.

A VERY useful compilation representing the present state of our knowledge of the process of fecundation in plants has recently appeared from the hand of Professor D. H. Mottier in one of the publications (No. 15) of the Carnegie Institution of Washington, under the title of 'Fecundation in Plants.' It is a thick octavo pamphlet of nearly two hundred pages, with seventy-five text illustrations. The author's purpose is well stated in the preface to be 'to present the subject of fecundation in the vegetable kingdom by the discussion of concrete cases, selecting from the great groups of plants certain typical representatives in which the sexual process seems to have been most thoroughly investigated.' In carrying out this purpose he devotes an introductory chapter of sixty pages to the discussion of typical problems of nuclear division and cell formation, especially in spore mother-cells, closing the chapter with an interesting ten-page discussion of the significance of the sexual process. In the latter the author is very emphatic in his disbelief in a chemical theory of fecundation. "Although the development of a rudimentary embryo induced by artificial means may proceed in the same manner as the product of normal fecundation, yet the artificial stimulus can not be looked upon as being equivalent to the sexual process. In the case of the former, we are dealing with a stimulus which merely starts growth, but a mature individual is never developed. The sting of an insect or some similar stimulus may call forth a growth in a leaf of an oak which results in a gall, a local and limited growth, but never in an oak tree, and we can not for one moment think of comparing such a stimulus to a sexual process." And again, 'The author does not agree with those who regard the sexual process merely as a restoration to the egg of the power of growth and division.'

The second chapter includes the discussion of typical cases of fecundation in which motile isogametes are concerned, the examples selected being *Ulothrix*, *Hydrodictyon* and *Ectocarpus*. Here he shows 'that fecundation